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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/733,889

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James R. Hochstein JR.

EH-10959 (03-429)

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EXAMINER

NDUBIZU, CHUKA CLEMENT

ART UNIT

PAPER NUMBER

3749

MAIL DATE

DELIVERY MODE

08/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/733,889	Applicant(s) HOCHSTEIN ET AL.	
	Examiner Chuka C. Ndubizu	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on through 6/272007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>062707</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Receipt of applicant's amendment filed on June 27, 2007 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-9, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings et al 2,972,502 in view of Hunter 5,494,004. Jennings teaches the invention as claimed (figs 9-11) an apparatus for cleaning a surface within a vessel (boiler) having a vessel wall 20 separating a vessel exterior from a vessel interior (column 2 line 65-68) and having a wall aperture (column 3 line 5-8), the apparatus comprising: an elongate conduit having a first end (beyond 325) and a second end (300

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outlet at 312) and positioned to direct a gas flow through the wall aperture and discharge from the second end (outlet 312) and comprising a plurality of segments 310, 320, 322 secured end-to-end against relative movement (see fig 9B); (claim 3) wherein at least three conduit segments namely; "section between 310 and 316 – first portion; section from 322 to the right – second portion; and between first and second portions – third portion"; each comprise: a tubular body 322 having first and second ends; and first and second attachment flanges (at the elbows) proximate the first and second ends, respectively; (claim 4, 16) wherein nozzle assembly extends at least partially through the vessel wall (column 6 line 5-8); (claim 5, 17, 18) wherein at least one of the segments is an elbow (see fig 9); (claim 6) wherein the conduit consists essentially of three portions: (as described above) where straight second portion is upstream of the first portion; and a third non-straight portion is between the first and second portions (see fig 9B); (claim 7) wherein the second and third portions have essentially circular internal cross-sections; and the first portion includes: a downstream portion (next to the boiler wall) having a circular internal cross-section essentially similar to the internal cross-sections of the second and third portions (fig 9B); an upstream portion having an internal cross-section smaller than the internal cross-section of the downstream portion (diameter of 316 < that of 31); and a transition portion (between 310 and 316) having a circular internal cross-section that transitions from essentially circular internal cross-section of the upstream portion 316 to essentially circular internal cross-section of the downstream portion 310; (claim 8, 19 20) wherein the first and second portions are

parallel and offset (fig 9B). Jennings further discloses that the cleaning apparatus can be used with gas blast only without introducing the pellets (column 6 line 57-60).

Jennings et al does not specifically teach a source of fuel and oxidizer, an igniter for initiating a reaction of fuel and oxidizer. However, Jennings discloses that dry deposits like soot may be rapidly removed using air blasts, steam and the like (column 1 line 65, 66). This suggests that Jennings invention is capable of using pressure waves of combustion gases similar to the one used in Applicant's cleaning apparatus.

Furthermore, Jennings does not teach a cleaning apparatus wherein at least three of the conduit segments have lengths along a gas flow path 1-3m and characteristic internal cross-sectional areas of $0.006-0.3\text{m}^2$; and the first and second portions being oriented at an angle of 20-160 degrees,

Hunter discloses an apparatus (fig 1-15) for cleaning a surface within a vessel having a vessel wall 83 separating a vessel exterior from a vessel interior and having a wall aperture 81, the apparatus comprising: a source of fuel 261 and oxidizer 233A; an igniter 235 for initiating a reaction of the fuel and oxidizer (fig 7); and an elongate conduit 31 having a first end 33 and a second end 35 and positioned to direct a gas flow of the reacted or reacting fuel and oxidizer through the wall aperture 81 and discharge from the second end and comprising a plurality of segments 21, 31 secured end-to-end; a nozzle assembly extends at least partially through the vessel wall (see fig 2); the apparatus comprising 2 portions, first portion 21 and second portion 31.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jennings's apparatus by including the limitations taught by Hunter

and recited above in order to provide a cleaning apparatus, which can effectively clean boilers with pulsed pressure waves as taught by Hunter (column 1 line 54-58).

With regard to claims 2 and 9, which recite the length along the gas path for three of the conduits being 1-3 m and the characteristic internal cross-sectional areas being about 0.006-0.3 m²; and the first and second portions being oriented at an angle of 20-160 degrees. Hunter discloses that the first 21 and second 31 portions can be oriented at an angle between 0 and 180 degrees to each other, since the member 31 can rotate to clean the wall 360 degrees about the opening 81 (column 3 line 30-34). Hunter also discloses that the second portion cross-sectional area is greater than 0.005 m² (column 6 line 62) and the two portions have a length of about 7 ft (2.15 m) (column 5 line 15). Therefore, the limitations in claims 2 and 9 are matters of optimization within prior art conditions; "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) MPEP 2144.05 II A.

Response to Arguments

Applicant's arguments filed on June 27 2007 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground of rejection. Claims 1-9, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings in view of Hunter. Jennings shows

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segments secured end-to-end against relative movement (see fig 9). Applicant's argument that Jennings invention includes the use of pellets for cleaning has been considered. Although, Jennings et al teaches the use of pellets, they also disclose that that the use of pellets may be optional (column 6 line 57-60). Since their cleaning apparatus can use blast air, steam or the like (column 1 line 65-67) it is capable of using with high-pressure combustion gases.

Therefore, Applicant's claims do not distinguish Applicant's invention over the prior art of record.

Conclusion

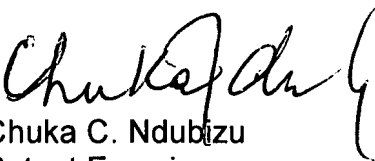
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuka C. Ndubizu whose telephone number is 571-272-6531. The examiner can normally be reached on Monday - Friday 8.30 - 4.30.

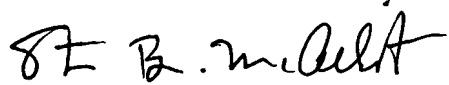
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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